

IN THE CLAIMS

Please amend the claims as follows:

1 1 (Currently Amended). A method of bonding lattice-mismatched semiconductors
2 comprising;
3 forming a Ge-based virtual substrate;
4 depositing on said virtual substrate a CMP layer that is polished to form a
5 planarized virtual substrate;
6 bonding a Si substrate to said planarized virtual substrate;
7 performing layer exfoliation on selective layers of said planarized virtual
8 substrate producing a damaged layer of Ge; and
9 removing said damaged layer of Ge by selective etching.

1 2 (Original). The method of claim 1, wherein said virtual substrate comprises an etch-
2 stop layer.

1 3 (Original). The method of claim 1, wherein said virtual substrate comprises a III-V
2 transfer layer.

1 4 (Original). The method of claim 3, wherein said III-V transfer layer serves as an
2 etch-stop.

1 5 (Original). The method of claim 1, wherein said virtual substrate comprises a $\text{Si}_{1-x}\text{Ge}_x$
2 passivation layer.

1 6 (Original). The method of claim 1, wherein said virtual substrate comprises a Si_3N_4
2 passivation layer.

1 7 (Original). The method of claim 1, wherein said CMP layer comprises an oxide.

1 8 (Original). The method of claim 1, wherein said CMP layer comprises Si.

1 9 (Original). The method of claim 2 further comprising removing said etch-stop layer
2 after removing said damaged Ge layer.

1 10 (Original). The method of claim 9, wherein said etch-stop comprises $\text{Si}_{0.4}\text{Ge}_{0.6}$.

1 11 (Original). The method of claim 9, wherein said virtual substrate comprises at least
2 one relaxed Ge layer and SiGe buffer.

1 12 (Currently Amended). A method of bonding lattice-mismatched semiconductors
2 comprising;

3 forming a virtual substrate;

4 using said virtual substrate to form a planarized virtual substrate;

5 bonding a Si substrate to said planarized virtual substrate; and

6 removing selective layers of damaged Ge of said planarized virtual substrate
7 associated with said virtual substrate.

1 13 (Original). The method of claim 12, wherein said virtual substrate comprises an
2 etch-stop layer.

1 14 (Original). The method of claim 12, wherein said virtual substrate comprises a III-
2 V transfer layer.

1 15 (Original). The method of claim 14, wherein said III-V transfer layer serves as an
2 etch-stop.

1 16 (Original). The method of claim 12, wherein said virtual substrate comprises a $\text{Si}_{1-x}\text{Ge}_x$
2 $\text{Si}_{1-x}\text{Ge}_x$ passivation layer.

1 17 (Original). The method of claim 12, wherein said virtual substrate comprises a
2 Si_3N_4 passivation layer.

1 18 (Original). The method of claim 12, wherein said planarized virtual substrate is
2 formed using oxide.

1 19 (Original). The method of claim 12, wherein said wherein said planarized virtual
2 substrate is formed using $\text{Si}_{1-x}\text{Ge}_x$.

1 20 (Original). The method of claim 13 further comprising removing said etch-stop
2 layer after removing said damaged Ge layer.

1 21 (Original). The method of claim 20, wherein said etch-stop comprises $\text{Si}_{0.4}\text{Ge}_{0.6}$.